



National Aeronautics and  
Space Administration

Washington, DC 20546

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# NASA Strategic Plan

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## MESSAGE FROM THE ADMINISTRATOR

The American people are calling for dramatic changes in the way their Government works. They want a smaller, less expensive Government that delivers more for less—one that does the right things, with the right number of people, at the right cost. NASA is in the vanguard of Government reinvention. We are revolutionizing the Agency, and the NASA that emerges will be better than ever.

Our Strategic Plan is critical to our ability to meet these challenges and deliver a vibrant aeronautics and space program that strengthens and inspires the Nation. The Plan is our top-level strategy. It articulates what we do, who our customers are, where we are going, and how we will get there. Furthermore, literally thousands of people have contributed their insights and expertise. More than 7,000 employees worked on the statement reflecting our Vision, Mission, and Values. NASA's Associate Administrators and Center Directors have been heavily involved, and we have reached out to our customers for their thoughts as well. The Senior Management Team will continue to be responsible for NASA's strategic planning and for the strategic management decisions necessary to turn this Plan into reality. We are fully committed to continue working with the men and women of NASA and our customers to meet our goals and realize our common vision.

This document builds on our tremendous successes of 1994, and it takes us a step closer to a top-notch strategic management system for the Agency. New in this document are specific goals for each Enterprise and more detailed strategies that describe how we will reach them.

You will see more significant changes in our 1996 Strategic Plan. That Plan, which we have already begun to develop, will reflect the dramatic changes sweeping NASA, the Government, and the Nation. It will be published in September 1995.

We welcome comments—from inside and outside of NASA—on this Plan and suggestions on ways to improve it. Improving our Plan is important to us, since it will be an essential tool for the Agency as we go forward into a new era in space and aeronautics and a new era in Government.

A handwritten signature in dark ink, reading "Daniel S. Goldin". The signature is fluid and cursive, with the first name "Daniel" being more prominent and the last name "Goldin" following in a similar style.

Daniel S. Goldin  
Administrator

# **NASA STRATEGIC PLAN**

February 1995



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# VISION, MISSION, AND GOALS

## VISION

*“NASA is an investment in America's future. As explorers, pioneers, and innovators, we boldly expand frontiers in air and space to inspire and serve America and to benefit the quality of life on Earth.”*

## MISSION

It is NASA's mission to:

- Explore, use, and enable the development of space for human enterprise
- Advance scientific knowledge and understanding of the Earth, the solar system, and the universe and use the environment of space for research.
- Research, develop, verify, and transfer advanced aeronautics, space, and related technologies.

The outcomes of NASA's activities contribute significantly to the achievement of America's goals in four key areas:

- **Economic Growth and Security.** We conduct aeronautics and space research and develop technology in partnership with industry, academia, and other Federal agencies to keep America capable and competitive.
- **Preserving the Environment.** We study the Earth as a planet and as a system to understand global change, enabling the world to address environmental issues.
- **Educational Excellence.** We involve the educational community in our endeavors to inspire America's students, create learning opportunities, and enlighten inquisitive minds.
- **Peaceful Exploration and Discovery.** We explore the universe to enrich human life by stimulating intellectual curiosity, opening new worlds of opportunity, and uniting nations of the world in this quest.

## **GOALS**

We will be at the forefront of exploration and science. We will develop and transfer to industry cutting-edge technologies in aeronautics and space to fulfill our National needs. We will establish a permanent human presence in space.

As we pursue our mission, we will enrich our Nation's society and economy. We will communicate our unique information to increase the public's knowledge, understanding, and application of science and technology. We will contribute to a better life for this and future generations.

In the longer term, it is our goal to undertake bold and noble challenges—exciting future programs, such as the return of humans to the Moon and human missions to Mars, which stir the imagination and fall within our and our international partners' technical and financial grasp.

## **THE NASA TEAM**

The National Aeronautics and Space Administration is composed of the men and women of NASA Headquarters and the Agency's 10 Field Installations around the country. NASA, however, does not accomplish its mission alone, but in partnership with large and small contractors, members of the science and academic community, other Federal, State and local agencies, and other space agencies from nations around the globe. Together, these entities form a successful team that is dedicated to providing high quality, technologically superior products, and services to its customers. NASA's highly skilled diverse workforce and world-class facilities represent the backbone of our Nation's civil research and development capabilities in aeronautics and space.

# FRAMEWORK

The National Aeronautics and Space Act of 1958. This Act established NASA and laid the foundation for our mission. It directs NASA to conduct space activities devoted to peaceful purposes for the benefit of all humankind. We are to preserve the leadership of the United States in aeronautics and space science and technology, and we are to expand knowledge of the Earth and space. We are to conduct human activities in space. We are to encourage the fullest commercial use of space. Furthermore, we are to cooperate with other nations, and we are directed to communicate the results of our efforts widely.

External Customers. The concept underlying the NASA Strategic Plan is our commitment to satisfying our external customers. We recognize that our requirements cannot be self-generated. Rather, we must meet our customers' needs and deal with changes in their needs over time. Our performance in carrying out programs, i.e., our success as an Agency, must be judged by our customers, not by ourselves.

As a Government agency, we see the following groups as our external customers and stakeholders: the Administration and Congress which provide us the policy direction and financial resources to conduct our programs; the science and education communities, aerospace and non-aerospace industries, Federal agencies, and other primary customers who receive our products directly and use them for purposes which yield public benefit; and the public which is both our ultimate resource provider and the ultimate beneficiary of our products. (See Figure, page 5.) We interact with the Administration, the Congress, and our primary customers, all of whom shape and influence our programs and products. This shaping process ensures that we satisfy them, and, thus, it ensures that the public ultimately benefits from its investment in NASA.

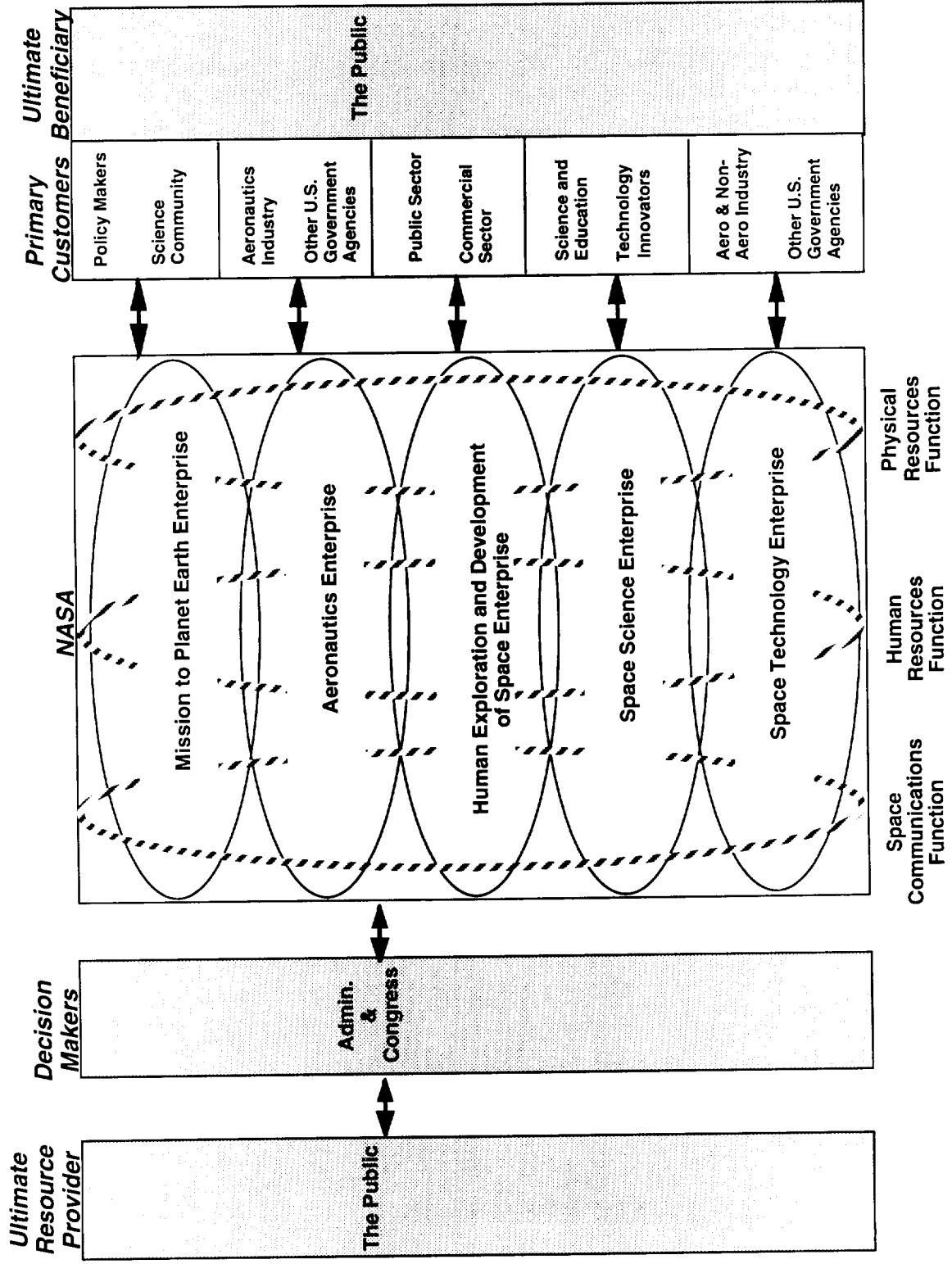
Strategic Enterprises. This NASA Strategic Plan establishes a framework for making management decisions by separating key Agency activities into the distinctly different categories of externally focused Strategic Enterprises and internally focused Strategic Functions—ends and means. We implement our mission and satisfy the needs of our external customers through five Strategic Enterprises:

- Mission to Planet Earth
- Aeronautics
- Human Exploration and Development of Space
- Space Science
- Space Technology

These Enterprises are the heart of our strategy. They identify at the most fundamental level what we do and for whom. They focus us on the ends, not the means, of our endeavors.



# Strategic Plan Framework



Each of our Strategic Enterprises are analogous to strategic business units, employed by private sector companies to focus on and respond to its customers' needs. Each Strategic Enterprise has a unique set of strategic goals, objectives, and concerns with a unique set of primary external customers. Because each must align its programmatic thrusts with its own customers' needs, each Enterprise requires its own individual strategy. However, each enterprise must ensure synergy with the strategies of the other enterprises and support the Agency's common goals.

Although NASA's broad mission is driven by the National Aeronautics and Space Act, the specific programs that are conducted within our Enterprises, and the priorities placed on them, are driven by the directives of the Administration and the Congress. As such, the programmatic content of our Enterprises changes over time as we respond to shifts in customer needs as well as domestic and international policy priorities. The specific content and prioritization of activities for our Enterprises will be presented in their strategic plans. The development of a balanced set of Agency priorities among the Enterprises will lay the groundwork for the budget process.

Strategic Functions. NASA's Strategic Functions provide capabilities required by the Strategic Enterprises to meet their external customers' needs. Our three Strategic Functions are:

- Space Communications
- Human Resources
- Physical Resources

These are Agency-level capabilities, consolidated to serve multiple Enterprises and maximize efficiencies in service delivery. The Functions differ from the Enterprises in that their customers are primarily internal, not external. However, unlike other Agency activities with internal customers, the strategies and policies of the Strategic Functions are significantly driven by the Enterprise strategies and, therefore, also require long-term planning.

# EXTERNAL ENVIRONMENT

To ensure that NASA's Strategic Plan is fully reflective of the dynamic nature of the national and international environment, our annual review of the Plan includes an assessment of the external environment and a revalidation of our key assumptions.

## ASSESSMENT

Over the past few years, the environment in which NASA operates has changed significantly. The Cold War has ended, but we find ourselves in the midst of vigorous global economic competition. There are also increased domestic demands on Federal resources. We have sought to understand the implications of these dramatic changes as we have developed our strategy. Four areas deserve particular attention: foreign policy and national security concerns, domestic policy priorities, political support, and public support.

In the post-Cold War era, the foreign policy aspect of the civil space program will focus on a spirit of expanded cooperation with our traditional international partners and the forging of new partnerships. We have been asked to play a major role in international ventures with Russia and the other former Soviet republics in order to expand space exploration opportunities and also to promote the peaceful uses of technology. There are also increased opportunities for cooperation with developing countries. These new relationships, along with strengthened ties to our traditional partners in Europe, Japan, and Canada, can help reinforce the economic and technological bonds in the new global society.

Domestic policy priorities are being adjusted in light of large Federal deficits, constrained budgets, and widespread concern over America's vitality and competitiveness. The Administration has placed a high priority on supporting and promoting high technology for economic growth through effective partnership within Government and with industry. With increased emphasis on pressing domestic needs, we will be required to ensure the relevance of our programs to national technology priorities and also to other domestic goals in areas such as the environment, health, education, aviation, and fundamental science.

The support of America's political leadership is vital to our success. The President has demonstrated his support for NASA and has indicated that we will play a significant role in the Administration's foreign policy initiatives and its science and technology agenda. In the Congress, NASA continues to enjoy bipartisan support. Continued political support will depend on our ability to play a role in addressing broad national needs and to deliver on our promises. Public support for NASA's programs has been positive and generally stable throughout our history. Recent public opinion polls continue to show support for U.S. endeavors in space. However, in polls which prioritize national programs,

space often does not fare as well as it has in years past. Continued public support will depend on our ability to satisfy the Nation's needs and to keep the public fully informed about our activities and their relevance.

### **KEY ASSUMPTIONS**

In developing this Strategic Plan, we have made certain assumptions concerning critical factors in our external environment. Significant changes in the external environment could force abrupt changes in our ability to implement this Plan which is based on the following key assumptions:

- NASA's budget will remain flat or decline, in real terms, for the foreseeable future, except for allowances for new Presidential initiatives.
- NASA will continue to streamline its workforce and supporting infrastructure while meeting customer mission requirements at the lowest possible cost.
- Understanding the Earth's environment and global change will continue to be an important issue requiring NASA's leadership in space observations and research.
- NASA will continue to have a leading role in developing aeronautics technology jointly with industry and will continue to support the safety and efficiency of the national air transportation system.
- The international Space Station will be successfully developed, deployed, operated, and utilized as a research platform through a partnership involving the United States, Europe, Japan, Canada, and Russia.
- The Space Shuttle will be maintained as an operational system to support NASA missions until a new launch system is developed.
- Space science will continue to be an integral part of the national program of basic scientific research.
- NASA's space technology will continue to be valuable to industry in enhancing U.S. competitiveness.
- NASA will be a primary participant in bringing about new capabilities for lower cost, more reliable access to space to support civil, national security, and commercial requirements.
- International commitments will be honored so that NASA will be seen as a viable, reliable international partner in all program areas.
- There will continue to be a viable U.S. industrial and academic base for aeronautics and space activities.
- NASA will work closely with other Federal agencies to ensure coordinated efforts in areas of space and aeronautics science and technology.

# **STRATEGIC ENTERPRISES**

## **MISSION TO PLANET EARTH ENTERPRISE**

NASA's Mission to Planet Earth is dedicated to understanding the total Earth system and the effects of natural and human-induced changes on the global environment. The Mission to Planet Earth Enterprise is pioneering the study of global change; many of the capabilities presently being developed will be needed indefinitely, and today's program is laying the foundation for long-term environment and climate monitoring and prediction.

To preserve and improve the Earth's environment for future generations, governments around the world need policies based upon the strongest possible scientific understanding. The unique vantage point of space provides information about the Earth's land, atmosphere, ice, oceans, and biota that is obtainable in no other way. In concert with the global research community, the Mission to Planet Earth Enterprise is developing the understanding needed to support the complex environmental policy decisions that lie ahead.

The goals of the Mission to Planet Earth Enterprise are to:

- Increase scientific understanding of the Earth as an integrated environmental system and its vulnerability to natural variations and human influences.
- Observe and characterize the entire Earth system and make resultant data widely available.
- Contribute to wise and timely national and international environmental policy.
- Foster the development of an informed and environmentally aware public.

To accomplish these goals, the Mission to Planet Earth Enterprise employs a strategy that promotes extensive international collaboration and cooperation with other Federal agencies; contributes to national and international assessments of the environment; strengthens environmental education and public awareness, in part by making data, information, and understanding widely available through the National Information Infrastructure; and, develops advanced technologies that lead to new and lower-cost science investigations that are transferred to U.S. industry.

The ultimate beneficiaries of Mission to Planet Earth are the present and future generations of the people on Earth. The primary customers of Mission to Planet Earth are those who use environmental information to make decisions, especially national policy makers in the Administration and Congress and their international counterparts. The world science community also uses Mission to Planet Earth data and information to produce assessments, forecasts and analysis, and to develop new understanding.

## **AERONAUTICS ENTERPRISE**

For over 75 years, NASA and its predecessor, the National Advisory Committee for Aeronautics, have worked closely with U.S. industry, universities, and other Federal agencies to give the United States a preeminent position in aeronautics. Today, aeronautics plays a vital role in the economic health and national security of the Nation, helping to generate almost one million high-quality jobs, over \$40 billion in annual exports, and almost \$30 billion in a positive balance of trade. The U.S. position, however, is being challenged by aggressive international competition. Future U.S. competitiveness in aeronautics, as well as the continued safety and productivity of the Nation's air transportation system, is dependent upon a coordinated and effective national investment in aeronautical research and technology. NASA's Aeronautics Enterprise will take a leadership role, in conjunction with industry, academia, the Department of Defense (DoD), the Federal Aviation Administration (FAA), and other members of the national aeronautical community, to ensure that investments are effectively defined and coordinated.

NASA's Aeronautics Enterprise will pioneer the identification, development, verification, transfer, application, and commercialization of high-payoff aeronautics technologies. It seeks to promote economic growth and security and enhance U.S. competitiveness through safe, superior, and environmentally compatible U.S. civil and military aircraft and through a safe, efficient national aviation system. This Enterprise will work closely with its aeronautics customers, including U.S. industry, the university community, DoD, and FAA, to ensure that its technology products and services add value, are timely, and have been developed to the level at which the customer can confidently make decisions regarding the application of those technologies.

The goals of the Aeronautics Enterprise are to:

- Develop high-payoff technologies for a new generation of environmentally compatible, economic subsonic aircraft and a safe, highly productive global air transportation system.
- Develop the technology base for an economically viable and environmentally compatible high-speed civil transport.
- Develop the technology options for new capabilities in high-performance aircraft;
- Develop and demonstrate technologies for air-breathing hypersonic flight.
- Develop advanced concepts, understanding of physical phenomena, and theoretical, experimental, and computational tools—including High Performance Computing and Communications technologies—for advanced aerospace systems.
- Develop, maintain, and operate critical national facilities for aeronautical research and for support of its customers and other NASA programs.

In achieving these goals, the Aeronautics Enterprise employs a strategy that emphasizes customer involvement in the planning and conduct of its programs, reengineers the internal operations of NASA's research centers to ensure maximum cost-effectiveness, and increases its emphasis on technology transfer to both aerospace and non-aerospace customers.

## **HUMAN EXPLORATION AND DEVELOPMENT OF SPACE ENTERPRISE**

*The mission of the Human Exploration and Development of Space Enterprise (HEDS) is to open the space frontier by exploring, using, and enabling the development of Space.* In so doing, the Enterprise seeks to bring the frontier of space fully within the sphere of human activity for the benefit of America and all humankind in this and future generations. The HEDS Enterprise creates opportunities and the potential for their realization in an ever-changing worldwide market. In exploring space, the Enterprise sends humans and machines together into the solar system to unravel its mysteries. In using space, the Enterprise will develop the tools and skills to live and work there, to take advantage of its unique environment for conducting research in science and engineering, and to generate technology. The Enterprise makes use of resources found in space to achieve our goals. In enabling the development of space, the Enterprise seeks to serve as a catalyst to commerce. In the long term, the goals of the Enterprise are to:

- Understand and use nature's processes in space
- Explore and settle the solar system
- Achieve routine space travel
- Enrich life on Earth through people living and working in space

With the dawning of a new era in international relations, the U.S. space program is moving to enhance cooperation among the space-faring nations. The international Space Station represents the largest multinational science and engineering program in history. The availability of this long-duration laboratory builds on Mercury, Gemini, Apollo, Skylab, Space Shuttle, and Spacelab to investigate the limits of human performance; it will vastly expand the human experience of living and working in space. The Station will also provide a platform for larger commercial investigations in the space environment. The confluence of these forces—an emphasis on global cooperation, the progression in availability of in-space capabilities, and the aspiration to further develop space for human benefit—has caused NASA to refocus this core Agency effort. As a research and development arm of the Nation, we will be the catalyst for space exploration and development. We will consciously integrate all the elements of and contributors to HEDS—human vehicles and platforms, research and technology development, robotic exploration, in a manner that permits the expansion of human endeavor into the far reaches of space. This requires close coordination with the Space Science and Technology Enterprises.

To achieve our goals, the Enterprise will employ a strategy that contributes to the national community; shapes activities to return near-term direct benefits in biology, biotechnology, combustion science, fluid physics, materials science, advanced technologies, medicine, education, and commerce; and, clearly communicates these benefits to the Enterprise's customers and investors, including the public. The experiential dimension of HEDS affects all peoples on Earth. In a time of increasing societal change and complexity, HEDS offers inspiration and hope for the future. The Enterprise will increasingly reach out to customers to both design relevant research and expand participation.

The Enterprise will contribute to creating new scientific knowledge by studying the effects of the space environment on important biological, chemical and physical processes. This knowledge will provide fundamental insights that serve as the basis for new Earthbound applications and technology. The HEDS Enterprise, in partnership with other Enterprises, will apply this knowledge to develop enabling technologies critical to humanity's needs and the quest for using and exploring space.

The Enterprise will combine technology and human presence to explore and settle the solar system. A near-term challenge will be to fully integrate and utilize the international Space Station, the Space Shuttle, and other international contributions. We will make good on our dedication to foster commercial space opportunities. This requires removing the impediments to commercial involvement and anticipating future market opportunities. We will pursue the HEDS objectives through Space Science Enterprise robotic missions. This will ensure that data are available on the composition of the Moon, Mars, and asteroids before any human sets foot on those bodies. The demonstration of utilization of extraterrestrial resources is a particularly important objective. The utilization of those resources will likely provide the basis for development and support of humans on planetary surfaces.

Our goal is to move from regular human access to space to routine space travel. We will keep the Space Shuttle fleet operational until a replacement vehicle is available in the next century. The Space Shuttle program emphasizes strategies to decrease operational costs, improve reliability, and increase performance. The program will meet the needs of the international Space Station. The Enterprise will collaborate with appropriate others to ensure that HEDS needs are incorporated in planning for next-generation rockets and spacecraft. These craft will support human and cargo access to space and beyond. The long-term Enterprise objective is to bring space travel increasingly within routine human experience.



## **SPACE SCIENCE ENTERPRISE**

NASA contributes to the creation of new scientific knowledge by exploring the solar system and the universe beyond. It does so to better understand who we are, how we got here, and where we are going. The Space Science Enterprise maintains scientific leadership, excites and inspires our society, strengthens education and scientific literacy, develops and transfers technologies to promote U.S. competitiveness, fosters international cooperation to enhance programs and share their benefits, and sets the stage for future space ventures. The mission of the Space Science Enterprise is to seek answers to fundamental questions, such as:

- What is the origin of the universe? What is the nature of the Big Bang and quasars? What is the origin of the Sun, the solar system, and life?
- How has the universe evolved since the Big Bang? How has the solar system evolved?
- What is the ultimate fate of the universe? Do dark matter and black holes play a crucial role?
- Is the solar system unique? Is the Earth unique in the universe? Are there planets around other stars?
- How are conditions for life on Earth maintained? How does the solar output vary? How does the Earth's magnetic field trap radiation and protect the planet?
- Did life ever arise on Mars or elsewhere in our solar system? Is there life or are there even civilizations around other stars?
- Are the laws of physics the same everywhere in the universe? Do the laws of physics remain the same at all times?

To accomplish this mission, the Enterprise has established the following goals:

- Discover the origin, evolution, and fate of the universe, galaxies, stars, and planets.
- Use the unique environment of space to probe the fundamental laws of physics.
- Understand the solar system's origin and evolution by exploring, surveying, and sampling the planets and moons with robotic spacecraft.
- Understand and characterize asteroids, lunar, and planetary resources.
- Determine the processes that drive the Sun and govern its effects on Earth's environment and the heliosphere.
- Determine if planets, including terrestrial-like planets, exist around stars.
- Determine if life exists, or ever existed, elsewhere in the solar system and the galaxy.

The Space Science Enterprise seeks to answer these fundamental questions by using space-based telescopes to observe the Universe; space probes, orbiters, and landers to explore the planets; and Earth-orbiting satellites and deep space missions to study the Sun and its influence on the Earth.

The Enterprise accomplishes its goals by employing a strategy that dramatically lowers mission costs while preserving, to the greatest extent possible, mission performance. To do so, it will accept prudent risk, shorten development times, explore new conceptual approaches, streamline management, and make other changes to enhance efficiency and effectiveness. The Space Science Enterprise will also develop enabling technology that is critical to its future success in partnership with the Space Technology Enterprise. These steps will strengthen the ability of the Enterprise to conduct smaller missions more frequently, thus providing a continuous stream of scientific data.

The public is both an investor in this research and the ultimate customer and beneficiary. In conducting scientific research, NASA serves the needs of the scientific and educational communities, the media, and industry—all of which play vital roles in bringing the benefits of its scientific research to the public. To enhance the return to the public, the Space Science Enterprise will take care to clearly communicate its exciting results, proactively build educational partnerships into its scientific programs, and select mission/program designs that maximize the development and dissemination of new technology relevant to broader national needs.

### **SPACE TECHNOLOGY ENTERPRISE**

Technological advances and their applications have been the engine behind U.S. productivity growth since World War II. This growth depends not only on the commercial use of existing technologies but also on a supply of new technologies made readily available to industry and to the U.S. Government. Through advanced technology development and transfer, the Space Technology Enterprise contributes significantly to the international competitiveness of U.S. industries. These contributions stimulate the economy by developing dual-use products and processes and by creating an opportunity for high-skill, high-wage American jobs.

The goals of the Space Technology Enterprise are to:

- Reduce the cost of access to space.
- Provide innovative technologies to enable ambitious, future space missions.
- Build capability in the U.S. space industry through focused space technology efforts.
- Share the harvest of space endeavors with the U.S. industrial community.

To achieve these goals, the Space Technology Enterprise will employ the following strategy: The Enterprise will establish jointly funded partnerships with commercial entities and other Government agencies having a direct interest in utilizing NASA expertise, technologies, facilities, or services. Recognizing the timely requirements of the commercial world, the Enterprise will rapidly complete agreements and licensing arrangements to stimulate the development and commercialization of focused technology. Thus, the Enterprise will help to enhance the vitality of established space industries and nurture emerging and potential space industries.

The Enterprise will lead NASA in transferring technology to the commercial sector to promote U.S. industrial competitiveness. The Space Technology Enterprise will provide techniques and mechanisms to assist all Enterprises and Functions in their technology-transfer efforts, as well as seek and facilitate technology “spin-in” from non-NASA sources.

In partnership with the other Enterprises, the Enterprise will nurture certain world-class capabilities that are critical to the development of space technologies and the education of future generations. For internal NASA customers, the Enterprise will develop mission-related advanced concepts and develop and verify critical, enabling, cutting-edge technologies for future space missions and transportation systems. Development of technology that has dual-use potential will be emphasized. The Enterprise will continue to ensure that NASA requirements to get nonhuman payloads from the Earth’s surface into space are met by procuring commercially available expendable launch vehicle launch services at the lowest cost to the Government. A specific focus of this Enterprise will be to develop in cooperation with industry technology leading to a development decision for a fully reusable launch system(s) which will meet the future access-to-space needs of small to large payloads for human space flight, national security, commerce, science, and technology development. NASA will work in partnership with the DoD, other appropriate Federal agencies, and U.S. industry to bring about an economical, safe, reliable, and operable national space transportation infrastructure.

The Enterprise will ensure program relevance and maintain a customer focus by involving its industry, Federal laboratory, and university customers, along with the other Enterprises and Functions, in program planning, review, and evaluation.

### **SYNERGY AMONG THE ENTERPRISES**

The Strategic Enterprises comprise an integrated national aeronautics and space program. Synergism of broad purposes, technology requirements, workforce skills, facilities, and many other dimensions was the basis for amalgamating these activities in NASA in the National Aeronautics and Space Act in 1958, and the benefits remain strong today.

In addition to the examples of synergies noted in the above Enterprise descriptions, the HEDS Enterprise provides the Space Science and Space Technology Enterprises the means to benefit from human presence in the unique environment of space. Conversely, the Space Science and Space Technology Enterprises provide the foundation for the HEDS Enterprise by, among other things, undertaking precursor robotic missions and developing needed knowledge and technology. The Space Science Enterprise enriches the Mission to Planet Earth Enterprise with studies of the Sun, the other planets, and the near-Earth environment for their relevance to our understanding of the Earth. The Aeronautics Enterprise and the HEDS Enterprise are mutually supportive in high-speed aerodynamics, vehicle control systems, and crew accommodation research. These are but a few examples of the mutually beneficial interactions among NASA’s Strategic Enterprises.

# **STRATEGIC FUNCTIONS**

NASA's three Strategic Functions provide enabling capabilities to all five Strategic Enterprises that are required to achieve their missions and satisfy the needs of their external customers. To ensure the optimal use of common capabilities across the Agency's programs, each Function works with the Enterprises to develop Agency-level strategies and the cross-cutting policies to implement them. Once established, it is the responsibility of the Functions to monitor Agency-wide policy execution on behalf of the Administrator and report to Office of Management and Budget, the Congress, the Administration, and others on the Agency's use of common capabilities.

## **SPACE COMMUNICATIONS**

An essential enabling capability for mission success is robust electronic access to space. The Space Communications Function provides the essential and responsive telecommunications services that enable NASA customers to effectively conduct operations which are necessary for mission success. This vital function is accomplished through the use of a cost-effective combination of NASA assets, commercial services, and other U.S. Government, as well as international, elements. Primary NASA-operated assets include the Tracking and Data Relay Satellite System and the Deep Space Network. The Tracking and Data Relay Satellite System provides the unique capability of real-time high data rate communications with orbiting spacecraft. The Deep Space Network provides the only communications link with missions in deep space. Additionally, an integrated network of Government and commercial data processing and telecommunications services is available to responsively, reliably, and economically meet customer requirements. The unique character of these integrated elements is manifested in the life-cycle cost-effectiveness for meeting multimission requirements in an extremely efficient manner.

This Function is responsible for analyzing the end-to-end telecommunications requirements of the Enterprises and developing, in partnership with the Enterprises, an integrated strategy which includes associated plans and budgets for meeting capacity needs.

The key goals for the Space Communications Function are to:

- Provide leadership and direction in developing operational concepts and operating systems to meet customer requirements.
- Ensure the continuity of essential communications services which include both capacity and capability.
- Stimulate development and transfer of dynamic communications and related technologies into the commercial marketplace so that NASA's future needs can be met while promoting economic competitiveness.

- Develop cost-effective, end-to-end communications architectures and implementation options.
- Reduce mission-unique requirements through standardization and reengineering.

In achieving these goals, a strategy that employs managerial and technical excellence, leveraging on commercial technology, will continue to emphasize the provision of integrated solutions and economy of scales to operational communications and information management needs which are common to a diverse variety of customers and missions.

## **HUMAN RESOURCES**

NASA must develop policies, systems, and programs to ensure that it plans, acquires, develops, and retains the human resources required to achieve its mission with innovation and excellence. The face of NASA must reflect the face of America. Therefore, it is vital that all human resources plans and programs be achieved with a view towards expanding the cultural diversity of our workforce.

The Human Resources Function provides stability for the Agency in an environment of change and readaptation. Downsizing, in particular, poses special challenges. The Agency must provide its managers and employees with the tools necessary to ensure full utilization and development of our vital human resources. To this end, the Human Resources Function works with the Strategic Enterprises and other elements of the NASA organization to achieve the following goals:

- Ensure that Agency recruitment and retention efforts provide NASA<sup>†</sup> "the best and the brightest," while increasing the participation of women, minorities, and individuals with disabilities in the Agency's programs and activities.
- Institutionalize recruitment and career development strategies and plans for every critical NASA skill category.
- Reduce administrative procedures and processes that burden NASA's human resources management.
- Optimize the NASA civil service/contractor workforce composition to accomplish future NASA research, development, and operations.
- Ensure the occupational health and safety of the NASA workforce in space and on the ground.

## **PHYSICAL RESOURCES**

The Physical Resources Strategic Function will work with the Strategic Enterprises and other elements of the NASA organization to continue an aggressive, business like approach to extract greater return, recognizing current and projected fiscal constraints.

As such, the primary goal of this Function is to concurrently ensure the availability of the necessary real estate, facilities, equipment, aircraft, and information resources for performing world class research, development, and operations.

NASA employs a strategy that maximizes the use of existing infrastructure, internal to the Agency as well as that of other agencies, private industry, academia, and our international partners; consolidates like activities; disposes of unneeded assets; shares use of unique facilities, equipment, and information systems of other organizations where feasible; and develops only those additional assets necessary to support evolving program and mission requirements. All aspects of this Strategic Function incorporate prudent planning to reduce environmental impacts.

Key elements of this strategy include recognizing that NASA's performance depends heavily on the availability and accessibility of our unique physical resources; providing sufficient maintenance to ensure that key physical resources remain capable, reliable, and safe for Government and industry use; employing a customer-orientation approach that is built on mutually developed approaches that take advantage of partnerships and shared use of physical resources; and developing adequate standards and policies that drive highly cost-effective decisions with minimal resources.

# VALUES AND OPERATING PRINCIPLES

In all that we do, we will operate according to our values and our operating principles. They form the bedrock of our efforts.

## VALUES

Excellence is key to NASA's achievements. As individuals and as a team, we strive to uphold these values:

- Our greatest strength is our workforce. We aggressively recruit a team of highly qualified individuals from America's diverse cultures. We empower our employees, encouraging and rewarding creativity, initiative, and teamwork. We provide training and valuable hands-on experience to develop our premier workforce. We enable the highest employee productivity through innovative practices that respond to employees' abilities and needs. We set high standards for leadership and lead by example. Each of us makes unique contributions to NASA's success, and we constantly seek ways to improve.
- We preserve America's confidence and trust by ensuring that our missions are consistent with national goals, carefully conceived, and well executed. We deliver on our promises and are accountable for our performance. We are open and honest with one another and with our customers, and we cooperate within and across organizations to deliver the highest quality results. We are bold but prudent in confronting challenges and accepting risks. We work with integrity and are dedicated to fulfilling our vision.

## OPERATING PRINCIPLES

Our operating principles are pervasive. They will be reflected in the strategic plans of the operating organizations comprising the Agency and also in the individual performance plans of NASA's managers and employees. The entire Agency will be held accountable for embodying the following operating principles (listed alphabetically) in the way it does business:

Budget and Financial Management. We will be guided in budget development, justification, and execution by openness, candor, and critical self-analysis. We will relate our estimates of resource requirements to specific performance measures, and use the outcome to determine the value of continuing programs. The preparation time and expense of developing budgets will be minimized without reducing the quality of the analysis. We will instill confidence in our program cost estimates by subjecting them to independent cost analysis reviews. In financial management, we will move aggressively to upgrade all of our funding control and

accounting systems and to perform functions uniformly across NASA. We will meet all requirements of the Chief Financial Officers Act and the Federal Managers Financial Integrity Act to create a positive environment that encourages our financial managers to excel. NASA's Program Managers will be provided with the budgetary support, program analysis, and fiscal information required for sound program execution.

Continual Improvement. We are committed to demonstrating and promoting excellence and continually improving processes, products, and services to better satisfy our customers' needs and requirements. We will utilize quality-focused leadership and management practices, as well as employee empowerment, to enable us to provide our customers with excellent products and services in the most cost-effective and timely manner.

Education. We will use NASA's inspiring mission, unique facilities, and specialized workforce to promote excellence in America's educational system. Specifically, we will work to enhance scientific and technical competence and literacy. We will do this by capturing the educational potential of each NASA program and by conducting and facilitating educational programs at all educational levels. We will maximize the delivery and impact of our educational programs by engaging our research and contractor communities in our educational efforts, by using state-of-the-art educational technologies, and by developing partnerships with the education community. We seek to assist the national educational system in meeting civilian aerospace needs and the broader scientific and technological needs of our Nation. Special emphasis will be placed on fostering historically underrepresented groups to pursue careers in science, mathematics, and engineering.

Environmental Stewardship. We will conduct all of our activities in a manner that recognizes our environmental responsibilities. The guiding principles for NASA's environmental program are compliance, restoration, prevention, and conservation.

Equal Opportunity and Diversity. We will institutionalize equal opportunity, equity, and diversity in all that we do. All NASA employees—women, men, minorities, older workers, and individuals with disabilities—will be integrated into all occupational groups, grade levels, and organizational units; they will hold significant project, program, and senior management positions; and they will be in the pool of outstanding talent from which candidates are selected. Our working environment will be free of discrimination and fully accessible, and it will be perceived to be so by all employees and applicants for employment. NASA will be a place in which equity and diversity are essential elements of the management practices of the Agency, its contractors, grantees, and other affiliated organizations. Women, men, minorities, older workers, and individuals with disabilities will be fully involved in NASA's programs and activities and in the universities, companies, and other organizations doing business with NASA.



Ethics and Standards of Conduct. NASA will foster an environment in which adherence to fundamental ethical principles and compliance with related laws and regulations flourish. We will do this not only because it is required but because it is the proper and appropriate thing to do. Leadership by example, individual awareness, and enlightened instruction will ensure that all NASA employees recognize and acknowledge the ethical bases and implications of their activities. In this way, we will enhance public trust in NASA's personnel and programs.

External Review. We will seek advice from external communities, both formally and informally. We will employ mechanisms such as advisory committees, independent program reviews, and informal discussions to hear from representatives of the Congress, the Administration, other Federal agencies, industry, the science community, and other relevant communities. We will evaluate program merit and priorities on the basis of conflict-free peer review and advice from committees broadly representative of our customers.

International Cooperation. We highly value international cooperation which has been and will remain an integral element of our Nation's civil space program. Such cooperation spreads the cost burden of space activities, providing higher return on U.S. taxpayer dollars; it enhances mission capabilities through access to international capabilities; and it advances U.S. foreign policy goals. In addition, cooperation with other nations strengthens the bonds of peace shared by people everywhere. NASA will continue to pursue mutually beneficial cooperative activities in aeronautics and space with other nations, mindful of the need to strengthen American competitiveness yet consistent with the National Aeronautics and Space Act's directive to encourage peaceful international cooperation.

National and Community Service. We will be responsible citizens by becoming involved in national and community service. We will support and conduct activities benefiting communities at the local, regional, and national levels. We will identify opportunities for service and volunteer to address the pressing social needs of our Nation.

Procurement/Acquisition. We will conduct all NASA acquisition activities with a commitment to quality, integrity, efficiency, and teamwork, recognizing the importance of these key factors in an effective acquisition process. Our acquisition streamlining reforms will strive for creative and common sense acquisition approaches to maximize the return on the American public's investment in NASA.

Public Information. We will “provide for the widest practicable and appropriate dissemination of information concerning . . . [our] . . . activities and the results thereof,” as directed in the National Aeronautics and Space Act. We will provide prompt, thorough, and accurate information to the media and the public. We will actively seek opportunities and pathways to disseminate information. We will develop approaches to ensure that we convey the relevance of our programs in terms of both increased knowledge about Earth and the universe and also practical benefits that will improve everyday life.

Safety and Mission Assurance. We will conduct our programs so that we are recognized as an international leader in safety, quality, and mission assurance activities. We will utilize a systematic and disciplined approach involving advocacy, oversight, and support to the technical risk decision making process.

Small and Small Disadvantaged Business Utilization. We will fully integrate small and small disadvantaged businesses into the competitive base of contractors from which NASA purchases goods and services and will urge NASA’s prime contractors to do the same in their subcontracting activities. At a minimum, we will meet, and we will urge our prime contractors to meet, small and small disadvantaged business utilization goals as established by Congress and as negotiated with the U.S. Small Business Administration. In contracting with small and small disadvantaged businesses, NASA will seek and urge its prime contractors to mentor, nurture, and develop such firms so as to forge permanent, mutually beneficial business relationships with them, particularly in high technology areas.

Technology Transfer and Commercialization. We will pursue new ways of doing business that effectively align our Enterprises and the Agency’s assets with U.S. economic security. We will implement our programs such that they align NASA assets and Enterprises into an alliance among Program Offices and Field Centers, creating a collaborative way of educating NASA staff on commercial applications, marketing our capabilities and establishing partnerships with industry, evaluating progress, and establishing an electronic commercial technology network. We will ensure that our technology-transfer activities and dissemination of information to the public benefits the national and economic security of the United States.

## IMPLEMENTING STRATEGY

We seek to better satisfy our customers and to expand our horizons, consistent with our mission. Our ability to respond to future opportunities under tight fiscal constraints, however, requires that we increase our effectiveness and efficiency while achieving significant cost reductions in current and future programs. To this end, we will pursue the following new ways of doing business:

- Use cutting-edge technology; take advantage of external technology.
- Accept prudent risk while striving for lower costs, shorter development times, and more frequent missions.
- Explore new conceptual approaches; stimulate and reward innovation and creativity.
- Streamline management; make decisions quickly; minimize reviews and documentation requirements to those that are essential for safety and quality.
- Cut red tape; streamline administrative processes; reduce administrative costs.
- Increase institutional efficiency by consolidating programs and reducing functional overlaps.
- Empower employees to perform their jobs and supervisors to manage, while holding all accountable for fulfilling their responsibilities.
- Ensure excellent internal communications by keeping all employees informed of activities and policies that affect them and by providing open, receptive channels to communicate concerns and suggestions.
- Seek to effect improved space launch capabilities to reduce the fraction of the NASA budget allocated to space launch.
- Conduct reviews prior to program initiation and throughout program life to confirm compliance with cost, schedule, and performance targets and to continually reaffirm relevance and contribution to our mission.
- Minimize development cost growth by increasing predevelopment investment and preparation.
- Work with other Federal agencies, other nations' space agencies, and U.S. industry, relying on them to complement and support our activities where sensible and cost-effective arrangements can be made.
- Emphasize research and development; transfer operational activities, as feasible, to other Federal agencies or commercial operators.
- Consider closing facilities that are duplicative, too expensive to maintain, or not tightly linked to mission requirements.
- Terminate activities once they have produced desired results or ceased to be relevant to the Agency's mission or broader national needs.

As we pursue new ways of doing business, we will follow decision rules which are consistent with the following values and operating principles:

- In general:
  - Maintain excellence in all that we do.
  - Forego activity in areas in which we cannot maintain adequate safety or robustness or a standard of excellence that would add value to the field.
  - Institutionalize equal opportunity, equity, and diversity as an underlying premise in all that we do.
  - Ensure that NASA Centers are Centers of Excellence in their fields.
- In selecting activities:
  - Evaluate and consider all costs (development, launch, operations) before initiating activities.
  - Undertake only those new programs which are consistent with our Strategic Plan and which have annual and life cycle costs consistent with realistic budget expectations.
  - Provide managers and employees the in-house research and development experience necessary to maintain expertise and to be “smart buyers” in their oversight of contracts.
- In implementing activities:
  - Pursue our Strategic Enterprises aggressively.
  - Preserve each Enterprise as an essential element of NASA’s service to the Nation, curtailing activities within Enterprises when necessary due to resource constraints rather than eliminating an entire Enterprise.
  - Maintain the capabilities of the Strategic Functions at levels adequate to support the activities of the Strategic Enterprises.
  - Maintain reasonable and adequate reserves throughout the life of all programs.
  - Behave reliably; once we have made the decision to undertake an activity, follow it through to completion.
  - Honor our international agreements and commitments.
  - Execute our mission with a sense of urgency; do what we say we will do.

## **IMPLEMENTING STRATEGIC MANAGEMENT**

We seek to manage the affairs of the Agency effectively and efficiently in the context of a broad plan, recognizing political and budgetary realities. Our strategic planning and our management improvement initiatives are part of a comprehensive strategic management process, which will be defined in the NASA Strategic Management System Handbook. This Handbook will include the processes and schedules for integrating our strategic planning with the budget process, for developing detailed program implementation plans, for developing the Agency's annual performance plans and reports as required by the Government Performance and Results Act. The Strategic Management System Handbook will also specify the relationships among the NASA Strategic Plan, the Enterprise strategic plans, and the strategic plans of the operating organizations which comprise the Agency and address the annual update of these plans.





